

Asynchronous Data Option

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Asynchronous Data Option

Introduction

The Meridian 1* system provides high speed digital data communications. The following Meridian digital telephones can be equipped with a data option, giving you simultaneous voice and data communications capability:

M2009
M2018
M2112
M2317
M3000

This booklet gives you information on how to make data calls and use the features of the Meridian 1.

* Meridian 1 is a trademark of Northern Telecom.

Using your data terminal or personal computer

When you want to use your data terminal you must make sure that:

- The terminal and the digital telephone are plugged into a wall power outlet
- The terminal's ON-LINE/ OFF-LINE switch is in the ON-LINE position
- There's no other data call in progress.

The RS-232 cable is connected from the terminal to the digital telephone. If you have a Lear Siegler ADM*, or Apple Macintosh* terminal, see page 16.

* ADM is a trademark of Lear Siegler Industries.

* Macintosh is a trademark of Apple Computer Inc.

Before you begin

With the data option equipped in your digital telephone, you can make and receive data calls for connections to other terminals and computers. All operations can be performed from your terminal keyboard without tying up your phone for voice calls.

Remember that:

- Your responses must end with a carriage return which is abbreviated as <CR> in this guide. (On some terminals, this is the ENTER key.)
- All prompts followed by a colon and three spaces require user input.
- All prompts on your terminal are in upper case but your inputs can be in upper or lower case.

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M3000 Touchphone data calling

All incoming data calls are announced with a distinctive beep from your terminal.

You won't hear any of the normal call progress sounds such as ringing or busy tones when you're making a data call using keyboard dialing.

When you're using the terminal keyboard for data calls or Meridian 1 features you'll see all prompts on your terminal.

If you have the data option on an M 3000 you'll see **DATA LINE** on the display. If you're already on a data call, you'll see **RELEASE DATA CALL** in place of **DATA LINE**. Follow the prompts and notes that appear on the display.

If you have an M 3000, you can make, answer, and end your data calls from your Touchphone display.

To make a data call:

- 1 Touch **DATA LINE**.
- 2 Dial the data number.

The prompts on the display tell you when the call has been connected.

- 3 Once connected (and the display returns to the idle state), begin logging on procedures on the data terminal keyboard.

Until the display changes to idle state, you cannot make or answer calls on your Touchphone.

If you want to make a data call while talking on the phone:

- 1 Touch **HOLD**.

The voice call is placed on hold.

- 2 Touch **DATA LINE**.

To answer a data call (Manual Answer must be turned on):

INCOMING DATA CALL

- 1 Touch **CONNECT**.
- 2 Once connected, begin logging on procedures on the keyboard.

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Notes:

If you want to get back to your voice call when the data call is connected, touch the key beside the fast flashing indicator.

You can use the terminal keyboard to make or answer data calls without ever putting your voice call on hold.

If you want to make a data call from the directory:

- 1 Touch **DATA LINE** .
- 2 Touch **DIRECTORY** .
- 3 Scroll through the Directory or use **FIND** to locate the name of the data service you want to call.
- 4 Touch **DATA SERVICE NAME** .
The data call is placed automatically.

If you're in the Directory and decide to make a data call:

- 1 Scroll through the Directory or touch **FIND** to locate the name of the data service you want to call.
- 2 Touch the data service name.

- 3 Touch **OK** to confirm the data call.
The call is dialed automatically.

If you reach a busy data number, you can set Ring Again to monitor the busy line and notify you when it's available.

If you're going to be in an associate's office, you can have your data calls forwarded to you. The dark flag beside **FORWARD** tells you that your data calls are being forwarded.

For more efficient data calling, you can use **LAST#** and **SAVED#** for data numbers just as you do for regular telephone numbers.

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Keyboard dialing

You can make data calls using the terminal keyboard. You can enter the data number you want to call or use the Call Menu. The Call Menu offers you choices in the types of calling activities you can use.

To reach the call menu:

1 <CR>.

ENTER NUMBER OR H (FOR HELP):

2 H <CR> . Call Menu is displayed.

3 C <CR>.

ENTER NUMBER:

Call Menu

A - AUTO DIAL

S - SPEED CALL

C - CALL

M - MODIFY

D - DISPLAY

SELECT

When you get familiar with data calling activities, skip the Call Menu by entering the data number immediately after the prompt:

ENTER NUMBER OR H (FOR HELP):

or by typing in the appropriate letter, for example, S <CR> for Speed Call.

You can also use Hayes protocol to make a data call. If you've already programmed your terminal or personal computer to use these procedures, you can continue to use them when you've connected your terminal to your telephone.

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Making data calls from the keyboard

To make a data call within your system:

1 <CR>

ENTER NUMBER OR H (FOR HELP):

2 Enter the data number.

CALLING _____

RINGING

ANSWERED

CALL CONNECTED SESSION STARTS

3 When connected, begin logging on

procedures.

To make a data call to a remote host:

1 <CR>

ENTER NUMBER OR H (FOR HELP):

2 Enter the data number.

CALLING

REMOTE CALL

ANSWERED

CALL CONNECTED SESSION STARTS

3 When connected, begin logging on procedures.

Notes:

If the data number you called isn't correct, the prompt, NOT IN SERVICE appears, and your call is released.

Use * for a pause in dialing and to indicate end of dialing.

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Manual modem pooling (remote host):

1 <CR>

ENTER NUMBER OR H (FOR
HELP):

2 Enter the modem number.

CALLING

RINGING

ANSWERED

MODEM RESERVED

ENTER REMOTE NUMBER:

3 Enter the remote number.

CALLING

REMOTE CALL ANSWERED

CALL CONNECTED. SESSION
STARTS

4 When connected, begin logging on
procedures.

Note:

In Manual Modem Pooling your call is released if dialing isn't completed in 30 seconds or if the remote modem doesn't answer within 120 seconds.

Alternatives to busy routes

Occasionally when you make a data call, all the regular routes are busy. You may be offered alternate routes that are more expensive than the regular routes or you can wait (queue) for a regular route to become available. Your System Administrator should tell you if you have one of these Queuing features.

Call Back Queuing - Limited Set of Routes

If there are no available routes for your data call in the limited set that you are allowed to queue on, the Ring Again

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feature will place you in a queue, and will notify you when a route is available. The Ring Again feature is described in the next section.

BUSY, RING AGAIN? (Y/N)

Call Back Queuing - All Routes & Expensive Route Warning

If you are allowed to queue on all routes and have the Expensive Route Warning feature, the system will offer an expensive route whenever the less expensive routes are busy. You can choose to send your data call on an expensive route or have your call placed in a waiting line or queue for a less expensive route or disconnect and call back later. If you choose to line up for a less expensive route, you'll be notified when one is available. This procedure is described in the next section under Ring Again.

EXPENSIVE ROUTE STAY ON
LINE OR RING AGAIN? (Y/N)

Call Back Queuing - Expensive Route Warning

If you only have the Expensive Route Warning feature, when the system offers you an expensive route you can either choose to send your data on this expensive route or disconnect and call back later.

EXPENSIVE ROUTE.

Off-Hook Queuing

If no routes are available for your data call, you may see the prompt, PLEASE WAIT ON-LINE FOR A FREE TRUNK. This feature lets your call wait on-line

for a short period (10-20 seconds). If no route becomes available within this period you will see the message, NOT IN SERVICE. RELEASED.

Authorization Code

If you have an Authorization Code, you can get access to restricted routes. For details, consult your system administrator.

ENTER AUTHORIZATION CODE:

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Answering and ending calls

RELEASED your terminal is not set to the same speed as the terminal or computer calling you. Follow your terminal's procedures for setting communications speed to the proper baud rate.

Answering manually

With either the M2000 or M3000 telephones, you can answer and end data calls using your terminal keyboard - even while a voice call is in progress.

When you see the prompt

INCOMING CALL. ANSWER?
(Y/N)

— Y <CR>

INCOMING CALL CONNECTED

If you see the prompt,
INCOMPATIBLE INCOMING CALL

Releasing during call setup:

- To release a data call before it has been completely established, hold down the Control key (CTRL) and type Z.

Ending an active call:

To end an active data call is as easy as three short taps of the BREAK key if you have one on your terminal. You'll see the message:

RELEASED

Other ways to disconnect are:

- Log off from the host computer.
- Put the ON/OFF-LINE switch in the OFF (LOCAL) position.
- Switch the terminal power off.

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Special features

(This is not recommended.)

- Hold down the Break key for about 2 seconds (not all terminals).

This section describes how to use the Meridian 1 data calling features from your terminal keyboard. These features make your data calling activities more efficient.

Some features are optional. To have a feature added, deleted or changed, consult your System Administrator.

Manual Answer

If there is an incoming data call from another terminal or computer, you can answer the call manually at your terminal, or have the terminal answer automatically.

As soon as you hear the alerting tone to indicate that a data call is being answered automatically you'll receive prompts on the monitor.

If you have set Manual Answer=N, the terminal answers an incoming call automatically after one ring provided that:

- The terminal is turned on
- The terminal is ON-LINE
- There's no active data call
- Modify Display isn't being used.

If power to the data option fails, the terminal will default to answering automatically whether it was set to Manual Answer=Y, or Manual

Answer=N.

To turn Manual Answer on or off:

1 <CR>

ENTER NUMBER OR H
(FOR HELP):

2 H <CR>. Call Menu is displayed.

A—AUTO NUMBER
S—SPEED NUMBER
R—REMOTE LOOPBACK
M—MANUAL ANSWER
Q—QUIT MODIFY
SELECT:

3 M <CR>

4 M <CR>.

MANUAL ANSWER (Y/N)

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- 5 Y <CR> or N <CR>. Modify menu is displayed again.
- 6 Q <CR>. Call Menu is displayed

Auto Dial

You can program any data number and dial it automatically using Auto Dial.

- 1 <CR>

ENTER NUMBER OR H (FOR HELP):

- 2 H <CR>. Call Menu is displayed.
- 3 A <CR>.

CALLING _____

RINGING/REMOTE CALL ANSWERED

CALL CONNECTED SESSION STARTS

To program or change an already programmed Auto Dial number, use the Modify feature.

Modify feature

You can use Modify to change your stored Auto Dial number or turn Auto Answer on or off. You can also use the Remote Loopback mode for testing purposes. If you are designated a Speed Call controller, you can change your Speed Call List.

Changing Auto Dial numbers:

- 1 <CR>

ENTER NUMBER OR H (FOR HELP):

- 2 H <CR>. Call Menu is displayed.
- 3 M <CR>.

A—AUTO NUMBER
S—SPEED NUMBER
R—REMOTE LOOPBACK
M—MANUAL ANSWER
Q—QUIT MODIFY
SELECT:

- 4 A <CR>.

AUTO DIAL NO=

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- 5 Type new Auto Dial number and <CR>. Modify Menu is displayed again
- 6 Q <CR>. Call Menu is displayed.

Ring Again

If you've called your local host computer and the line is busy, you can use Ring Again. This feature is designed to monitor the busy data line, notify you when it's free and dial the number for you.
Activating Ring Again:

- 1 <CR>

ENTER NUMBER OR H (FOR HELP):

- 2 Type the data number.

BUSY RING AGAIN? (Y/N)

or

BUSY, PREVIOUS RING AGAIN ACTIVE, REPLACE? (Y/N)

- 3 Y.

RING AGAIN PLACED

or

PREVIOUS RING AGAIN ACTIVE

To dial the Ring Again number:

DATA STATION NOW AVAILABLE

PLACE CALL (Y/N)

— Y <CR>

CALLING

You can use Ring Again for in-house data calls, and outside data calls when the trunk circuits from your system or a tandem office are busy.

When Ring Again notifies you that the data line is available, answer soon or Ring Again will be cancelled.

You can't set Ring Again to watch two data lines at one time. The second attempt to set Ring Again will replace the Ring Again already set on the first call.

If you become involved in a data call

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after setting Ring Again to watch a busy data line, you will not be interrupted when the watched data line becomes available. Ring Again will be cancelled without disrupting your current data call.

You will not be made aware of this if you are using an M2000 telephone, however, the M3000 Touchphone display will tell you when the data line is available.

Speed Call

You have a list of 1, 2 or 3-digit access codes for data numbers you call frequently. To call one of these numbers quickly, use the code instead of the number.

1 <CR>

ENTER NUMBER OR H (FOR HELP):

2 H <CR>.

Call Menu is displayed

3 Type S <CR> .

ENTER ACCESS CODE:

4 Type the code for the data number you're dialing.

CALLING _____

RINGING/REMOTE CALL

ANSWERED

CALL CONNECTED SESSION

STARTS

5 When connected, begin logging on procedures.

If you're the controller of your Speed Call List, you can change the Speed Call List using the Modify feature.

To change a Speed Call number:

1 <CR>

ENTER NUMBER OR H (FOR HELP):

2 H <CR>. Call Menu is displayed.

3 M <CR> .

A—AUTO NUMBER
S—SPEED NUMBER

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R—REMOTE LOOPBACK
M—MANUAL ANSWER
Q—QUIT MODIFY
SELECT:

4 Type S <CR> .

ENTER ACCESS CODE:

5 Type in access code and <CR>.

SPEED NUMBER: _____

6 Type in the new number to be associated with access code.
Modify menu is displayed again.

7 Q <CR>. Call Menu is displayed.

Display data profile

The terminal will display information

about the terminal parameters.

1 <CR>

ENTER NUMBER OR H (FOR HELP):

2 H <CR>. Call Menu is displayed.

3 Type D <CR>. The parameters for your terminal are displayed.

BAUD RATE = N

REMOTE LOOPBACK = Y OR N

MANUAL ANSWER = Y OR N

AUTO DIAL NO. = XXXX

Baud rate is sensed automatically from the setting of your data terminal.

Remote Loopback, Manual Answer, and the Auto Dial number are set

using the Modify feature.

Setting Remote Loopback:

The Remote Loopback feature lets you verify the data communications path from your digital telephone to the other data access module and back.

1 <CR>

ENTER NUMBER OR H (FOR HELP):

2 H <CR>. Call Menu is displayed.

3 M <CR> .

A—AUTO NUMBER
S—SPEED NUMBER
R—REMOTE LOOPBACK
M—MANUAL ANSWER
Q—QUIT MODIFY
SELECT:

Asynchronous Data Option

4 R <CR>.

REMOTE LOOPBACK (Y/N)

5 Y <CR> . Modify Menu is displayed again

6 Q <CR> . Call Menu is displayed.

7 Set your terminal to half duplex or local echo, and dial a data call to any data number in the system. Any characters you type should appear twice on your monitor. If the second character matches the first character, the data transmission was error-free.

8 When you are done, release the call. When the call is released, Remote Loopback is automatically turned off.

Set relocation

If you've been given the set relocation security code, you'll be able to move your telephone and data terminal to another location but continue to use the same telephone number.

To remove the data terminal from the network:

1 <CR>

ENTER NUMBER OR H (FOR HELP):

2 Type in the Special Prefix Code (SPRE) and then 81, the security code, if required, and the 4-digit identification code.

The identification code can be any four-digit number excluding * and #.

CALLING _____

SET RELOCATED OUT

RELEASED

3 Unplug the terminal from the power supply.

To remove the phone from the system:

1 Lift the handset or press an extension key to get dial tone.

2 Dial the SPRE code, then 81.

3 Dial the security code, if required.

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- 4 Dial another four-digit identification code. You'll hear 2 seconds of confirmation tone.
- 5 Hang up.
- 6 Unplug the phone and its power supply, and disconnect the terminal from the phone.

To relocate the phone:

- 1 Move the telephone to the new location. Plug in the telephone jack, and plug in the power supply.
- 2 Pick up the handset to get dial tone.
- 3 Dial the identification code. You'll hear 2 seconds of confirmation tone.
- 4 Hang up.

To relocate the terminal:

- 1 Reconnect the terminal to the telephone and connect the power.
- 2 Type CTRL R.

ENTER SET RELOCATION ID:

- 3 Type the identification code.

SET RELOCATED IN

Note:

The SPRE code and security code are provided by the system administrator.

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Configuration Notes

Lear Siegler ADM terminals

If you're using a Lear Siegler ADM* 3, 5, or 11 terminal, you should make sure that Pin 22 in the RS-232 cable is disconnected. These terminals go into test mode if Pin 22 is not disconnected.

Apple Macintosh

If you're using an Apple Macintosh*, you'll need a special 9-pin connector cable from the computer to the RS-232 connector on the data option.

The connections are as follows:

9-pin (from computer)		25-pin (RS-232)
pin 3	to	pin 7
pin 5	to	pin 2
pin 9	to	pin 3
		Bridge pins 4 and 5. Bridge pins 6, 8 and 20.

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Hayes Dialing

The data option supports many of the features of Hayes Dialing.

If your terminal or personal computer has previously been connected to a Hayes Smartmodem*, you'll be familiar with the information provided in this section. If you have not used a Hayes Smartmodem but want to use Hayes Dialing, this section will provide you with the information you need to know.

For more details, refer to the Hayes Smartmodem 1200 Hardware Reference Manual.

Remember that not all commands and options for the Hayes modem are applicable to your digital telephone.

* Smartmodem is a trademark of Hayes Microcomputer Products, Inc.

Information you need to know

If you're using Hayes Dialing, you should know the following information about typing commands.

Type AT before typing a command.

Type your commands in upper case, followed by <CR> .

You can edit your commands by using the BACKSPACE and DELETE keys.

Issue each command on a single command line.

All incoming calls are announced with a distinctive beep.

You won't hear any of the normal call progress sounds when you're making a data call using Hayes Dialing.

You'll see prompts on the monitor that give you information on how your data call is progressing.

You have the option of having word prompts or number prompts appear on the monitor. This table gives the relationship between the word and number prompts, and explains what they mean.

Answering data calls using Hayes

You can answer a data call using automatic answer or manual answer. You choose the method of answering

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calls using the appropriate parameter setting command that is specified in the table on Command Parameters at the end of this section. Automatic answer is the default setting.

Automatic answer

An incoming data call is announced by a buzz tone from your terminal and the message **CONNECT** appears on your screen.

You're automatically connected to the incoming call and the data session can proceed.

Manual answer

An incoming data call buzzes, and the message **RING** appears on the screen.

1 **ATA <CR>**.

CONNECT

2 When you receive the prompt to log on, begin logging on procedures.

For manual answer to be turned on, the S0 register must be 0. (See the table on Command Parameters.)

Switching between Hayes Dialing and Keyboard Dialing

You can switch between Hayes Dialing and Keyboard Dialing modes whenever no data calling or feature

Word	Number	Meaning
OK	0	Your command has been carried out
CONNECT	1	Your call is connected
RING	2	An incoming call is ringing
NO CARRIER	3	Your call has not been completed

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activity is in progress. (The prompt RELEASED or NO CARRIER is the most recent prompt.)

To use Hayes dialing:

1 AT <CR> .

OK

You're in Hayes dialing mode.

2 Dial your data call.

To get back to keyboard dialing:

1 Release the active data call.

NO CARRIER .

2 Press <CR>.

ENTER NUMBER OF H (FOR HELP):

You're in keyboard dialing mode.

When you receive an incoming data call, it appears in the last dialing mode you used. For example, if you made your most recent data call using Hayes dialing, you'll receive the next incoming call in Hayes dialing mode.

Calling a local or remote host:

1 Type ATD followed by the data number <CR> .

CONNECT

2 Begin logging on procedures.

Calling a remote host using manual modem pooling:

1 Type ATD followed by the modem number remote number.

CONNECT

2 When you receive the prompt to log on, begin logging on procedures.

Type in the modem number and the remote number in the order given, separated by the octothorpe (#) as shown.

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If you see the prompt NO CARRIER, the data service you called may be busy or you may have dialed a wrong number. Release the call and try again later. Or, check the number and dial again.

Ending data calls with Hayes

Ending data calls using Hayes Dialing is the same as with keyboard dialing. Refer to the previous section on ending data calls for details.

Using a release character

You can also program a character on the keyboard to act as a release key. You send this release character twice

to end your data call. Refer to the table on Command Parameters for details on programming a release character.

If you send the release character as part of a script file, you must send it three times when you are operating at speeds up to 4800 baud. At 9600 or 19,200 baud, the release character must be sent eight times sequentially to produce a disconnect.

To avoid accidental disconnects, the release character must be one which does not otherwise appear in your data transmissions. A control character is recommended.

Call parameter settings

Before making a data call, you can change the parameters of the call.

You can choose whether prompts will be echoed back to you or not. The default setting is to have prompts echoed back.

You can choose whether prompts will be echoed back to you in words or numbers. The default is to have prompts echoed back in words.

You can choose to answer incoming calls automatically after one ring, or manually, by a typed-in command.

You can choose to have your commands echoed back to you.

Command	Parameter	Result
ATA		Answer calls manually
ATDnnnn	n = 0-9	Dial the data number
ATEn	n = 0, 1	0 means your commands will not echo back 1 means your commands will echo back
ATQn	n = 0, 1	0 means prompts are sent to the terminal 1 means prompts are not sent to the terminal
ATRCx	x = any character	Change the release character to (x)
ATRP		Display the release character
ATS0=n	n = 0-99	0 means manual answer 1-99 means auto answer (default)
ATVn	n = 0, 1	0 means number prompts are sent 1 means word prompts are sent (default)
ATZ	none	Reset parameters to normal values

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Troubleshooting

Symptom	Solution
The telephone isn't working.	1 Check that the wall cord is plugged in and not broken. 2 Contact your service representative.
The telephone is working but you don't see the prompts or the Call Menu, and there is no response to CR.	1 Check that the terminal power is ON. 2 Check that the cable between the terminal and the data option is not loose or unplugged. 3 Check that the power to the data option is not unplugged. 4 Check that the terminal is ON-LINE. 5 Check the data communications settings of your terminal or personal computer.
The Call Menu appears but there is no response to your input.	1 Consult your service representative.
The data call is connected but there is no response from the computer.	1 Use the Modify feature to set Remote Loopback ON and call the same computer again. When connected, type in several characters. If those characters are echoed back to you, there is a problem with the computer. Call computer maintenance.
You are trying to initiate a data call but some characters appear on the screen as a square or some other symbol (garbage).	1 Enter <CR> followed by a period (.) followed by <CR>. Parity is automatically reset correctly and you'll see a legible prompt.

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